The Maine Installer

August, 1994Dedicated to Professionalism in Underground Tank Installation Vol. 3, No. 1

I Give Up; This is Not Really Quarterly

Even though we had the best of intentions that this publication will happen quarterly, its becoming obvious that other work will pretty much always pre-empt the newsletter. Even so, we're going to do what we can to get a newsletter out as often as possible.

This time, the newsletter is starting off with a pat on the back for all installers. Incidents of groundwater contamination from oil and gasoline are decreasing, and you are helping. We've also stolen a story of our own Dave McCaskill, who published and article in *LUSTLine* (a newsletter of the New England Interstate Water Pollution Control Commssion) on the values of secondary containment. Louis Fontaine of the Department of Environmental Protection's (DEP) Bureau of Air Quality Control will brief us on changes in Maine's Stage I vapor recovery requirements.

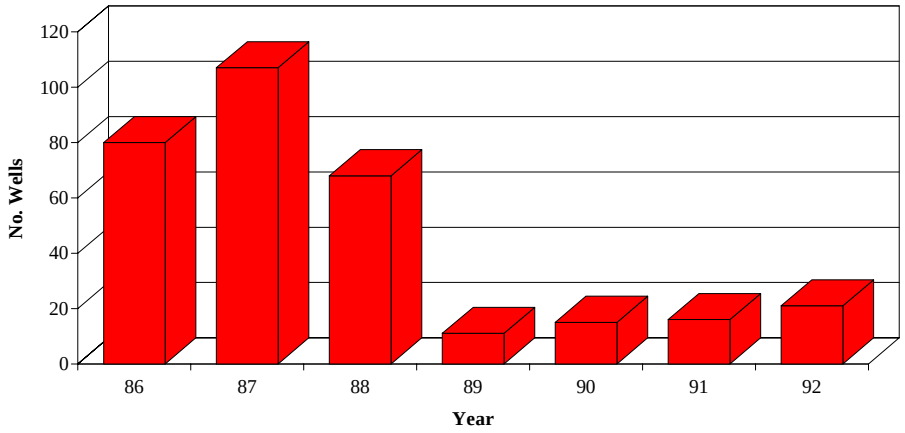
And finally, we'll have some of our regular features. They include mentions of updated publications, a biography of Board member Wayne Gifford, discussion of recent enforcement actions, and new training which has become available.

Maine's UST Program Shows Signs of Working

The graph below depects the number of wells found to be contaminated with oil between 1986 and 1992 in Maine. To refresh your memory, there are three key dates in the Department of Environmental Protection's (DEP's) regulatory program that influence these numbers: (1) Maine's UST regulations first went into effect in 1986; (2) the first mandatory removal date for non-conforming tanks and piping occured in 1989, and (3) the second mandatory removal date for non-conforming tanks and piping occured in 1991.

Don't just read this as our opportunity to brag; its also our way of saying thanks. Such a marked increase in ground water protection could not have happened without the dedicated and hard working efforts of the certified tank installers. We're sure your work will result in the protection of our resources for many years to come.

NUMBER OF PRIVATE DRINKING WATER WELLS CONTAMINATED BY OIL FROM LEAKING UNDERGROUND OIL STORAGE TANKS: 1986 - 1992



If you have any questions of a technical or regulatory nature that you wish to have answered in this newsletter, please direct them to Jim Hynson, Board of Underground Storage Tank Installers, c/o Maine Department of Environmental Protection, State House Station 17, Augusta, ME 04333. Or call 207/289-2651.

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Stage I Vapor Recovery Requirements Now Cover More Facilities.

Over the past summers, concentrations of ozone exceeded both state and federal standards in the seven southern counties of Maine. Results include heavy and strained breathing by the elderly and people with lung problems. Children's lungs, growing rapidly and sensitive to chemicals like ozone, can also be damaged.

Ozone is produced when organic chemicals and petroleum products evaporate into the air and react with oxygen and sunlight. The chemicals that produce ozone come from both within the State of Maine and from upwind states. The chemicals come from industries, automobiles, gasoline terminals and service stations, and other businesses that use petroleum products and volatile organic compounds.

The State of Maine requires significant producers of ozone precursors to reduce the emissions of these precursors in an effort to eventually eliminate the days in Maine when the air quality is unhealthy. The larger gasoline service stations in Maine , those with an annual through-put greater than 250,000 gallons per year, have been required to have and use Stage I vapor recovery systems since 1991. A few stations received an extension for the installation of vapor recovery to take advantage of the underground tank removal schedule, but none of these extension go past October 1, 1994.

Maine regulations that control the release of gasoline vapors changed this summer. A number of these changes will affect the installation of new and replacement gasoline storage tanks and require the retro-fitting of some existing tanks. Beginning on May 31, 1995, all stationary gasoline storage tanks, both above and under ground, will have to be equipped with a submerged fill pipe (drop tube) and stations with a monthly through-put greater than 10,000 gallons will have to be equipped with and use Stage I vapor recovery when receiving a shipment of gasoline. Bulk gasoline plants are also required to have vapor controls by May 31, 1995. On this date, all transfers of gasoline to and from any bulk plant storage tank must be done through a submerged fill. Bulk plants with a storage tank greater than 550 gallons or with a average daily through-put greater than 4,000 gallons for any calendar month must be equipped with and use Stage I vapor recovery when transferring gasoline from both incoming and out-going trucks.

The regulations do not require that the installers or service stations owners follow any set of standards for the vapor recovery equipment but the Department recommends that accepted industry standards such as those from the Petroleum Equipment Institute be followed. The regulations do require that:

- the submerged fill pipes extend to within six inches of the storage tank bottom;
- liquid fill connections have vapor tight caps;
- back pressure in a tank truck does not exceed 18 inches of pressure or 6 inches of vacuum; and
- that pressure relief valves do not open within this range of pressure.

I have described only a small portion of the new and revised gasoline vapor control regulations. These regulations have many more requirements for gasoline station and bulk plant owners and operators, and on gasoline tank trucks. If anyone would like a copy of these regulation, contact the Department of Environmental Protection's Bureau of Air Quality Control at 287-2437. Questions about the regulations can be directed to the Department's regional offices in Augusta (287-4867), Bangor (941-4570), Portland (822-6300) and Presque Isle (764-0477).

Louis Fontaine, Environmental Specialist, Bureau of Air Quality Control, Maine Department of Environmental Protction, State House Station 17, Augusta, ME 04333.

Ghastly Tank Stories That Would Have Turned Out Differently With Secondary Containment

Failures and Releases at New UST Installations

THE ORDEAL IS FINALLY OVER. THOSE old bare steel tanks have been yanked out and carted away. You'd watched in horror while half your property was dug up and shipped off to a secure landfill. T'he new tanks are single-walled cathodically protected steel, the submerged pumps have line leak detectors, the piping is fiberglass, and the whole system is monitored by a picket line of wells. All you have to do is check the wells once a month and have the local tank testing company pressure test the lines once a year. You're settling back for another 20 years of selling gas and plodding through life's more mundane problems when...

In this installment of "Tanks Down East" I would

like to tell a few strange but true stories involving new USTs installed after our initial tank rules that simply required leak detection, but prior to our current rules that require mandatory secondary containment with continuous monitoring.

I often ask myself, while reflecting on the virtues of secondary containment, "how would a new 'up to spec' tank fail?" There were the early problems associated with fiberglass reinforced plastic (FRP)-some of the tanks were cracking, especially under the tank ends, because of the lack of proper backfill support, and some experienced dipstick damage at the tank bottom under the fill pipe. But, new tank design, improved installation techniques, and the addition of striker plates have virtually eliminated these problems. Steel tanks, on the other hand, aren't as susceptible to support problems. They might fail because of corrosion caused by improper installation or a manufacturing defect. But, here in Maine, we did have a cathodically protected steel tank fail ... for no apparent reason.

The Gash Story #1

The owner at this facility got a complaint from a customer who, after filling up his car, hadn't even left the gas station when his car quit. It didn't take long to figure out that something was wrong with the gasoline. Sure enough, when the USTs were checked, one was found to contain several feet of water. When the tank was removed, we found a 3 foot long hairline split in a welded seam along the bottom third of the tank. There was no evidence of improper installation, and the installer assured us that the tank had been properly air/soap tested above grade prior to installation,

The tank manufacturer was kind enough to double the owner's money back (in the form of a double walled tank), but the jobber had to pay for extensive soil removal and free product recovery. Six years later, the problem is still there and a long-term groundwater extraction system has been installed. Then there are the legal ramifications-the owner sues the installer/jobber who in turn sues the tank manufacturer.

A similar failure occurred somewhere else in New England. It also involved a cathodically protected steel tank; again, there was no apparent reason for the failure. The moral of this story is, things happen, but you don't need to have a catastrophic failure. A double-walled tank would have provided more

structural protection and, if monitored properly, could have detected the leak long before someone's automobile gas tank did.

Wrap Those Rascals, Story #2

One day my inspection partner and I got the urge to skip a meeting and head out to look at some newly installed UST systems. We targeted a convenience store/gas station where the UST system had been replaced about 4 months earlier. The system consisted of single-walled FRP tanks and piping with submerged pump delivery.

This type of pressurized piping system has a pump located in the tank; product is forced up through the piping into the dispenser. EPA rules require that, in addition to the 0.2 gph leak detection requirement for tanks and piping, pressurized pumps be equipped with a line leak detector that monitors for gross leaks, greater than 3 gallons per hour. This "gross" leak detection requirement was imposed on pressurized piping systems because, under pressure, they can release a lot product over a short time. Thus, when the line leak detector senses a large leak, it greatly reduces the flow of product to the nozzle. The customer then complains and the operator is, thereby, alerted to the possible leak.

As part of our inspection we, of course, looked for the hne leak detector, which is located on the pump manifold which is in turn mounted on top of the tank. To access these manifolds, one must look into a manhole pit which is often guarded by impossibly heavy metal covers that must be painstakingly pried open through the precise manipulation of two screwdrivers. (Thankfully, new manhole cover designs include user-friendly lifting handles.)

I popped the top on one manhole at this site and was greeted by a heady whiff of BTEX compounds. There is usually some residual soil contamination in these pits from routine maintenance, but this odor was beyond residual. I told my companion that we had a problem here and suggested that he check the monitoring wells. They happened to have some here even though they weren't required for this site.

Each of the 4 wells surrounding the tanks had a 3- to 4-inch layer of product on top of the groundwater. As a customer started to fill up at this pump, product came squirting out of the pump manffold-just like one of those "super soakers"-right before our eyes. A maintenance person was dispatched and, upon inspection,

found that the gasket in the "functional element" was torn and had caused the leak. Five hundred gallons of product was pumped from these monitoring (tumed recovery) wells. This facility was not doing proper inventory control so the leak would have continued for a long time ff my partner and I hadn't been mysteriously drawn to the site.

The moral of this story is that line leak detectors monitor for leaks downstream in the piping, but they don't detect leaks upstream in the manifold itself. This component of the pressurized piping system is not protected against gross leaks as intended by the federal UST rule -- an oversight of the rule I would say. It seems to me that secondary containment is the only technically feasible way to achieve complete leak detection on a submersible pump manifold.

Story #3

A station operator called our field response office one day to report that his daily inventory showed a loss of 1,200 gallons over the course of 3 days. Upon investigation, we opened the submerged pump man-holes and found leakage around some of the line leak detector top bolts, along with a lot of contaminated soil. (A few years ago there was a run of faulty line leak detectors that were springing leaks around the top bolts.) This time the daily inventory did its job -- sort of -- but there was still a lot of gasoline to clean up. The moral of the story is that it's really important to keep good daily inventory records, but secondary containment with continuous monitoring would have really helped minimize the damages.

Story #4

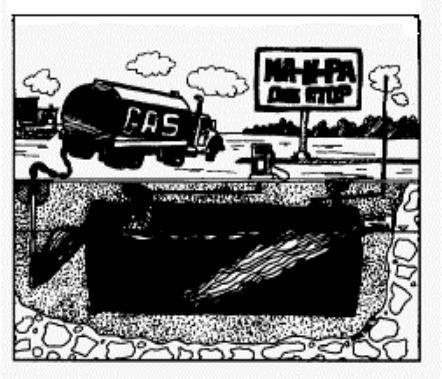
We had another situation where the station owner had the presence of mind (and the money) to install sec-ondary containment when it wasn't even required. He also made a practice of visually checking his submerged pump containment sumps even though they were equipped with continuous leak detection (i.e., float switches). This float switch would Ifft up if there was an inflow of liquid and activate an alarm. During one of his monthly inspections he found some 5 gallons of gasoline in the piping sump. It was another faulty hne leak detector bolt. The fine leak detector was leaking around the top bolts and the float switch in the sump had jammed so that the alarm couldn't activate.

This is a scary story, because the owner had secondary containment with leak detection and things still went wrong.

Life isn't always perfect. The heart-warming part of the story is that because of the owner's conscientious eyeball and investment in secondary containment, he was spared the heartbreak of a cleanup. The moral to stories 2, 3, and 4 is don't have submersible pump manffolds in an open manhole pit-wrap those rascals up in a liquid-tight container with leak detection AND perform periodic visual checks.

Down the Wrong Pipe Story #5

My last ghastly story is a commentary on both strange behavior and the notion of using monitoring wells as a leak detection method. Most UST regulators have had at least one incident where a UST monitoring well was topped off with product. There were two such cases in Maine, where, in each case, approximately 1,600 gallons of fuel oil was pumped into the wells -- a tribute to the permeability of the nice granular backfill used in the tank excavation.



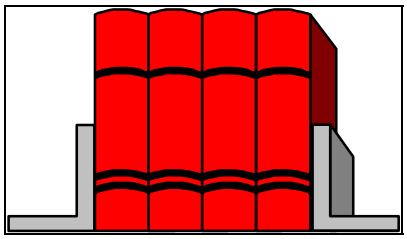
Now, with proper labeling these traumatic ordeals could have been avoided. To make sure that the right product is put in the right place, the American Petroleum Institute (API) established a fill port code system comprised of colors and symbols; a black triangle is the symbol for monitoring wells. That symbol and the words -Monitoring/Observation Well Do Not Filr should be stamped on the well cover and the cap.

But fill port codes aside, the whole idea of installing a direct conduit (a monitoring well) into the groundwater in the very area where product is routinely handled and likely to spill is somewhat paradoxical. (If only they'd had secondary containment with continuous monitoring instead.) Unless a well is properly sealed, spillage can easily find its way right into the monitoring well. Bentonite (a modified expansive clay) and concrete are oenerally used to seal wells from surface contaminants. However, most of the bentonite seals that I have seen around UST observation wells have been improperly compacted and hydrated. The end result kind of looks like someone lost his or her oatmeal breakfast.

So, keep in mind, creepy things do happen in the hidden world of

USTs-not all that often-but it only has to happen once at your site to make you wonder how you could have avoided the problem-perhaps by taking nothing for granted, not even that brand new UST installation.

W. David McCaskill ,Assistant Engineer, Maine Department of Environmental Protection. Reprinted from LUSTLine, Bulletin 19. ***Tanks Down East*** *is a regular feature of LUSTLine..*



Almost New Publications

The last year saw many of the publications used in the Board's study packets revised. While many of them will have to ordered directly from their source, we thought it a good idea to bring you up to date on what the newest versions are.

The National Fire Protection Association (NFPA) revised a number of their documents in the last year or two. NFPA 30 (Flammable and Combustible Liquids Code) and NFPA 30A (Automotive and Marine Service Station Code) were both revised in 1993. In addition, both codes along with NFPA 395 (Standard for the Storage of Flammable and Combustible Liquids on Farms and Isolated Construction Projects) are compiled into one book published in 1993, Flammable and Combustible Liquids Code Handbook. NFPA 31 (Installation of Oil Burning Equipment) and NFPA 329 (Handling Underground Releases of Flammable and Combustible Liquids) were both revised in 1992. A catalog of publications can be obtained from NFPA at 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9904; 1-800/344-3555. Publications can also be ordered from this address. All NFPA publications must be purchased.

The Petroleum Equipment Institute's (PEI) standard, Recommended Practices for Installation of Underground Liquid Storage Systems (PEI/RP100) was recently updated in 1994. The document can be ordered (at cost) from the Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101; 918/494-9696.

Both Owens-Corning's and Smith Fiberglass's installation instructions have been updated since the study packets were prepared. These documents should be available from the petroleum equipment supplier where you purchase those brands of tanks and piping.

Enforcement Update

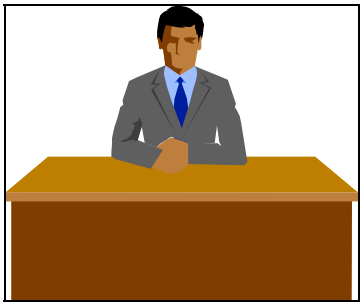
Four enforcement cases were resolved since our last newsletter. The first involved motor fuel tanks at a marina on the coast. Water continued to leak into the system at every abnormally high tide and concentrated in the manway sumps. The water in the manway sumps set off the facility's leak detection system and resulted in the owner complaining to the Board in August of 1992. The installer was generally amenable to fixing the problem without escalation of enforcement action. However, several attempts at the repair were unsuccessful and scheduling problems between the installer

and the owner were encountered. But finally, last May, the installer did get on the site and found the real problem in the outer containment of the piping and repaired the facility. The Board dismissed further action as a result of the repair being completed.

A second case involved the installation of an unregistered fuel oil tank. This matter was resolved with a Consent Agreement in which proper registration materials were filed. Civil penalties were waived, since the installation occurred at a point in time when Department of Environmental Protection (DEP) staffing for the registration program was in transition, and thus DEP could not demonstrate the form was not received.

The third case involved an installer who let his certificate expire and did not have sufficient continuing education to be recertified. The installer subsequently requested to be reinstated. Through a Consent Agreement, the Board agreed to a probationary reinstatement with payment of a $10 late fee and a $250 civil penalty. The probation condition set was the installer had to make up the missing continuing education within sex (6) months.

Last but not least was the case of a marketing and distribution facility which was experiencing a problem of water entering the tank and causing customers' vehicles to stop running. Problems at this facility, installed in 1989, had been ongoing for at least two (2) years. After not having the matter successfully repaired by the original installer, the owner contacted another installer to attempt a repair. Upon excavation of the piping, the second installer found a number of problems and contacted DEP and subsequently the Board's staff. After a hearing, the Board found the first installer guilty of a number of violations: (1) failure to be present for much of the original installation, (2) failure to protect flexible connectors from corrosion, (3) failure to remove temporary supports from piping, (4) failure to provide a test station for cathodic protection monitoring, (5) failure to install "Stage I" vapor recovery, (6) failure to provide overfill protection, (7) failure to air test the tank prior to it being placed in the ground, (8) failure to soap joints during the course of the piping test (chemical heat packs were found fused to the joints upon excavation, making it impossible to soap the joints during the air test), (9) allowing uncertified employees to attempt an initial repair in the spring of 1993, and (10) accomplishing the repair in May of 1993 without registering the work. The Board issued civil penalties to this installer of $250 per violation (a total of $2500), restricted his certificate to fuel oil, and further conditioned his certificate such that it is no longer renewable.



Board Bio: Wayne J. Gifford

Wayne Gifford was appointed the Board of Underground Storage Tank Installers in September

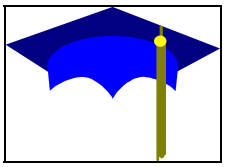
1993. He is completing a term that ends in December 1994 (and we hope he'll agree to stay on) and represents the Maine Oil Dealer's Association on the Board.

Born in Farmington, his family relocated from Wilton to Augusta, then to Manchester in 1955. He was educated at Kents Hill School, Class of '66 and Wesleyan University, Class of '70.

Wayne joined the family heating oil business, WADLEIGH'S, INC., in 1972, after fulfilling a two year military obligation. He presently serves WADLEIGH'S as Vice President overseeing retail heating/heating oil operations, including their UST Division.

In addition to his appointment to the Board of Underground Oil Tank Installers, Wayne has twice served as President of the Tri-City Fuel Dealers Association and is a past member of the Maine Oil Dealers' Association (MODA) Education Committee.

Father of three grown children, he resides in Readfield with his wife, Lynda. Together they enjoy skiing, boating, golf, and gardening.



Training Opportunities

Since the last newsletter, the Board accredited or renewed the credit of the following courses:

- An OSHA 8 hour refresher held at Southern Maine Technical College on March 11, 1994 was accredited for 3 hours.
- A field instruction of the installation of "Enviroflex" piping (Total Containment) was accredited for two (2) hours. The instruction is scheduled on an installation by installation basis and is being coordinated by Gould Equipment. Contact Richard or Ben Tuttle at Gould Equipment, 17 Haskell Avenue, South Portland, ME 04106. Telephones are 207/767-2151 (local), 800/834-6853 (Toll Free, ME), and 800/852-0062 (Toll Free, NH and VT.).
- A self study course in Veeder-Root UST Monitoring Systems, coordinated by Gould Equipment Company, was accredited for two (2) hours. Contact Richard or Ben Tuttle at Gould Equipment, 17 Haskell Avenue, South Portland, ME 04106. Telephones are 207/767-2151 (local), 800/834-6853 (Toll Free, ME), and 800/852-0062 (Toll Free, NH and VT.).
- Dead River Oil Company was granted two (2) hours BUSTI accreditation for an OSHA safety training refresher arranged through Safety Communications Corp.
- Webber Oil Company was granted BUSTI accreditation for offering OSHA safety training to its employees. The 40 hour and 24 hour courses will be accredited for eight (8) hours, while the eight (8) hour refresher

training is accredited for two (2) hours.

- Several installers obtained two (2) hours credit on June 17, 1994 for attending a field demonstration of the installation of "Poly Piping" (Advanced Polymer Technology).

During the course of its consideration of accreditation, the Board decided to change its policy of allowing three (3) hours for an OSHA safety training refresher. The Board decided to reduce the allowable credit to two (2) hours. Their reasoning was that those courses are already required by OSHA and that the Board wanted to ensure some time was left to instruct installers in the technical aspects of their work.

In addition to courses approved by the Board, a number of other educational opportunities are available. The Board's rules allow installer to apply for credit for education when the course sponsors do not.

- The College of Engineering, University of Wisconsin, Madison (432 North Lake St., Madison, WI, 53706; 800/462-0876) continues to offer courses in safety, cathodic protection decision, and underground liquid storage system installation. All courses involve fees.
- The Colorado School of Mines offers a four day course entitled Underground Storage Tank Technology and Management at a cost of $650. Contact CSM Office of Continuing Education, Office of special Programs and Continuing Education (SPACE), Colorado School of Mines, Golden, CO 80401; 303/273-3321.

State of Maine
BOARD OF UNDERGROUND
STORAGE TANK INSTALLERS
Station #17

Augusta, Maine 04333

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